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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,253	06/06/2001	Shingo Nozawa	35.G2825	5954

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EXAMINER	
TRAN, NHAN T	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,253	NOZAWA, SHINGO	
	Examiner	Art Unit	
	Nhan T. Tran	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/19/2003 & 6/6/2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *8-13,18,26,28 and 32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,14-17,19-25,27,29-31,33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species I, Sub-species A corresponding to Figures 3-5 and 8, claims 1-7, 14-17, 19-25, 27, 29-31, 33 and 34 in the reply filed on 8/19/2005 is acknowledged. The traversal is on the ground(s) that Species I, II, III, IV and V are not distinct and can be examined without serious burden. This is *not* found persuasive because although each of the species is related to enlargement and reduction of an image, each species has different circuit configuration that is distinct from each other, for instant, circuit configuration of Species I, Sub-species A (Figures 1, 3-5 & 8) has a distinct conversion circuit 102 from the conversion circuit 103 of Species I, Sub-species B (Figures 1, 6-8) and conversion circuit 901 of Species II (Figures 9 & 10), III (Figures 11 & 10), IV (Figures 12 & 10) and V (Figures 13 & 10). It is clear that each of species I, II, III, IV and V requires a different combination in circuit configuration from one another. Thus, they are distinct and place a serious burden on the Examiner.

The requirement is still deemed proper and is therefore made FINAL.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6, 7, 14-17, 21, 27, 29, 31 & 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Kowno et al (US 2001/0013897 A1).

Regarding claim 1, Kowno discloses an imaging apparatus (Figs. 1-4) comprising:

an imaging unit (CCD 20; Fig. 4) which generates, by capturing an image of a subject, an image signal corresponding to an image having an arbitrary number of H pixels by W pixels (electronic zoom area, i.e., object's face area) which is not greater than a predetermined number of P pixels by Q pixels in vertical and horizontal directions (entire area of the image sensor; see Figs. 8 & 9; [0018], [0020], [0050] & [0157]);

an enlarging unit (DSP 33 and/or CPU 39 in combination with buffer memory 36; Fig. 4) which generates an enlarged image signal corresponding to an enlarged image having the number of P pixels by Q pixels (example shown in Fig. 9) by performing enlargement processing on the image signal generated by said imaging means (see [0080]); and

a reducing unit (also DSP 33 and/or CPU 39 in combination with buffer memory 36; Fig. 4) which generates a reduced image signal (thumbnail image 52 shown in Fig. 7) corresponding

to a reduced image having a predetermined number of M pixels by N pixels by performing reduction processing on the enlarged image signal corresponding to the enlarged image having the number of P pixels by Q pixels (see [0112]).

Regarding claim 2, Kowno also discloses that the enlarging means sets a magnification used in the enlargement processing on the image signal generated by said imaging means in accordance with the number of H pixels by W pixels (see [0050], [0080] and [0157], wherein magnification ratio is set in accordance with the electronic zoom-in area actuated by the zoom button 15).

Regarding claim 3, it is also clearly seen that reducing means generating reduced image signal (the thumbnail 52) corresponding to the reduced image having the number of M pixels x N pixels by performing reduction processing on the enlarged image signal using a fixed ratio. See [0112], wherein the ratio between thumbnail image 52 shown in Fig. 7 and the enlarged image by the electronic zoom is always constant because these image resolutions are always constant.

Regarding claim 6, Kowno discloses that the imaging means includes an imaging device having the number of P pixels x Q pixels (full size image without electronic zoom as shown in Fig. 8), and generates the image signal corresponding to the image having the number of H pixels x W pixels using part of an area of said imaging device (an object area, i.e., center or upper portion using electronic zoom to enlarge the object area as shown in Fig. 9).

Regarding claim 7, as already disclosed in [0112], the reduced image signal (the thumbnail 52) generated by the reducing means is recorded onto a recording medium (memory card 24).

Regarding claim 14, see the analysis of claim 1, wherein "the first predetermined size" is an enlarged image by electronic zoom (example shown in Fig. 9) and "the second predetermined size" is the reduced image as a thumbnail image 52 shown in Fig. 7.

Regarding claim 15, Kowno further discloses that said enlarging means performs the enlargement processing (electronic zoom) on said image signal generated by said imaging means by using a magnification in accordance with the arbitrary size (depending on how much zoom-in actuated from zoom button 15, see [0050] & [0157]) on said image signal generated by said imaging means; and said reducing means performs the reduction processing on said image signal generated by said enlarging means by using a fixed factor (see the analysis of claim 3).

Regarding claim 16, see the analysis of claim 1 for electronic zoom function having variable magnification which depends on the actuated level of the zoom button 15 and claim 3 for fixed ratio between the enlarged image and the thumbnail.

Regarding claim 17, see the analysis of claim 14.

Regarding claims 21 & 27, see the analysis of claim 1.

Regarding claim 29, see the analysis of claim 14.

Regarding claim 31, see the analysis of claim 1. Further disclosed is an inherent storage medium storing a program (overall control program and JPEG program) for the CPU 39 and DSP 33 to function as described in [0074] – [0085].

Regarding claim 33, see the analyses of claims 14 and 31.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4, 5, 19, 20, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowno et al (US 2001/0013897 A1) in view of Suga (US 6,707,467 B1).

Regarding claim 19, Kowno discloses all limitations as analyzed in claim 1. Furthermore, Kowno teaches that the electronic zoom function is performed using interpolation and/or thinning process (see [0050] & [0157]). However, Kowno is silent about performing cubic convolution interpolation for enlarging the image and finite-impulse-response (FIR) filtering for reducing the enlarged image.

Suga teaches resolution transforming apparatus and method for enlarging and reducing an image using linear or cubic interpolation and FIR filtering process so as to reduce image blur and un-uniformity caused by resolution transforming process (see Suga, col. 3, lines 4-7 and col. 6, line 63 – col. 7, line 8).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the imaging apparatus in Kowno by implementing cubic convolutional interpolation processing on the image signal generated by the imaging means for enlarging the image and performing FIR filtering on the enlarged image signal so that image blur and un-uniformity would be reduced as suggested by Suga.

Regarding claim 20, see the analysis of claim 19, wherein the linear interpolation is also suggested by Suga for enlarging the image to obtain the same result as the cubic convolutional interpolation (see Suga, col. 3, lines 4-7 and col. 6, line 63 – col. 7, line 8). Therefore, it would have been obvious to one of ordinary skill in the art to implement a linear interpolation process for enlarging the image generated by the imaging means as an alternative process over the cubic convolutional interpolation process without affecting the result in the reduction of image blur and un-uniformity.

Regarding claims 22-24, see the analyses of claims 19 & 20.

Regarding claims 4 & 5, see the analyses of claims 19 & 20.

5. Claims 25, 30 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowno et al (US 2001/0013897 A1) in view of Lee (US 6,876,387 B1) and in further view of Sugiyama (US 6,327,306 B1).

Regarding claim 25, Kowno discloses the image processing apparatus comprising:

input means (CCD 20) for inputting an image signal corresponding to an image including an arbitrary number of H pixels (vertical area for electronic zoom, i.e., object's face area) which is less than a predetermined number of P pixels in the vertical direction of one field (entire vertical resolution of the image sensor; see Figs. 8 & 9; [0018], [0020], [0050] & [0157]);

enlarging means (DSP 33 and/or CPU 39 in combination with buffer memory 36; Fig. 4) for generating an image signal corresponding to an image including the number of P pixels in the vertical direction by performing enlargement processing on the input image signal (see [0080]).

Kowno is silent about that the image input signal to DSP 33 and CPU 39 from the CCD is in interlaced format. As taught by Lee, the CCD output of an imaging apparatus can be implemented using either non-interlaced scanning type or an interlaced scanning type sensor which outputs image signal in interlaced format to signal processing circuit for further process (see Lee; col. 2, lines 42-51).

Therefore, it would have been obvious to one of ordinary skill in the art to use interlaced scanning type CCD for as an input means for inputting an interlaced image signal into the enlarging means in Kowno instead of non-interlaced scanning type CCD as suggested by Lee to provide direct view (i.e., live view) with more compatibility on interlaced type display devices.

Kowno and Lee do not explicitly teach that the enlarging means for generating a progressive image signal and reducing means for generating an interlaced image including a predetermined number of M pixels in the vertical direction by performing reduction processing on the progressive image signal in units of frames. However, Sugiyama teaches an image processing apparatus that converts a moving image signal from an interlace input into a progressive image signal and storing the converted progressive image signal onto a recording medium (6) to achieve high coding efficiency and image quality (see Sugiyama, Fig. 2, col. 2, lines 50-57). Sugiyama also teaches reducing means (progressive-to-interlace decoder, Fig. 3) for converting the progressive image being stored in the recording medium into an interlaced signal for reproduction (i.e., displaying) on various display devices at output 25 (see Sugiyama, col. 2, lines 50-57 and col. 5, lines 29-35, wherein the number of pixels in the vertical direction of the progressive image of one frame is reduced after performing reduction of vertical resolution as shown in Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teaching of Sugiyama into the image apparatus of Kowno and Lee for converting the interlaced image signal of the zoom area into an progressive image signal to enhance vertical resolution (enlargement) and also converting the progressive image signal into an interlaced image signal for outputting to an external device of compatible interlaced type while providing high coding efficiency and image quality (i.e., for printing the progressive image), thereby an improved image apparatus would be realized.

Regarding claim 30, see the analysis of claim 25.

Regarding claim 34, see the analysis of claim 25, wherein a storage medium storing a program for controlling a computer (CPU 39) is inherently disclosed by Kowno in [0074] – [0085].

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NT.

DAVID L. OMETZ
SUPERVISORY PATENT
EXAMINER